

Preliminary Amendment and
Response to Restriction Request
Attorney Docket No. T-6217
Application No. 10/800,047
Page 2

Amendment to the Claims:

Applicants respectfully request that the claims in the subject patent application be amended as follows prior to examination. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- Claim 1 (Original) A catalyst having a macropore structure comprising zeolite Y wherein the peak macropore diameter of the catalyst, measured by ASTM Test No. D 4284-03, is less than about 2000 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms, measured by ASTM Test No. D 4284-03, is less than or equal to about 0.30 milliliters per gram.
- Claim 2 (Original) The catalyst of claim 1 wherein the cumulative pore volume at pore diameters less than or equal to about 400 angstroms is less than about 0.30 milliliters per gram.
- Claim 3 (Original) The catalyst of claim 2 wherein the cumulative pore volume at pore diameters less than or equal to about 300 angstroms is less than about 0.25 milliliters per gram.
- Claim 4 (Original) The catalyst of claim 3 wherein the cumulative pore volume at pore diameters less than or equal to about 300 angstroms is less than about 0.20 milliliters per gram.

Preliminary Amendment and
Response to Restriction Request
Attorney Docket No. T-6217
Application No. 10/800,047
Page 3

- Claim 5 (Original) The catalyst of claim 4 wherein the cumulative pore volume of the catalyst at pore diameters less than or equal to about 400 angstroms is in the range of about 0.05 milliliters per gram to about 0.18 milliliters per gram.
- Claim 6 (Original) The catalyst of claim 5 wherein the cumulative pore volume of the catalyst at pore diameters less than or equal to about 300 angstroms is in the range of about 0.08 milliliters per gram to about 0.16 milliliters per gram.
- Claim 7 (Original) The catalyst of claim 1 wherein the peak macropore diameter is in the range of about 700 angstroms to about 1800 angstroms.
- Claim 8 (Original) The catalyst of claim 7 wherein the peak macropore diameter is in the range of about 750 angstroms to about 1600 angstroms.
- Claim 9 (Original) The catalyst of claim 8 wherein the peak macropore diameter of the catalyst is in the range of about 900 angstroms to about 1400 angstroms.
- Claim 10 (Original) The catalyst of claim 1 wherein the zeolite Y has a silica to alumina ratio of about 5:1 to about 100:1.
- Claim 11 (Original) The catalyst of claim 10 wherein the zeolite Y has a silica to alumina ratio of about 30:1 to about 80:1.

Preliminary Amendment and
Response to Restriction Request
Attorney Docket No. T-6217
Application No. 10/800,047
Page 4

- Claim 12 (Original) The catalyst of claim 11 wherein the zeolite Y has the silica to alumina ratio of about 50:1 to about 70:1.
- Claim 13 (Original) The catalyst of claim 1 wherein the catalyst is in the form of a tablet.
- Claim 14 (Original) The catalyst of claim 13 wherein peak macropore diameter of the catalyst is in the range of about 500 angstroms to about 1500 angstroms and cumulative pore volume at pore diameters less than or equal to about 500 angstroms is in the range of about 0.05 milliliters per gram to about 0.15 milliliters per gram.
- Claim 15 (Original) A catalyst composite comprising:
- (a) the catalyst of claim 1; and
 - (b) a binder.
- Claim 16 (Original) The catalyst composite of claim 15 wherein the binder is a suitable inorganic material.
- Claim 17 (Original) The catalyst composite of claim 16 wherein the binder is alumina.
- Claim 18 (Original) The catalyst composite of claim 15 wherein the zeolite Y is present in the range of about 40 weight percent to

Preliminary Amendment and
Response to Restriction Request
Attorney Docket No. T-6217
Application No. 10/800,047
Page 5

about 99 weight percent based on the total dry weight of the catalyst composite.

Claim 19 (Original) The catalyst composite of claim 18 wherein the zeolite Y is present in the range of about 50 weight percent to about 85 weight percent based on the total dry weight of the catalyst composite.

Claim 20 (Currently amended) A process for preparing a catalyst composite wherein the peak macropore diameter of the catalyst, measured by ASTM Test No. D 4284-03, is less than about 2000 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms, measured by ASTM Test No. D 4284-03, is less than or equal to about 0.30 milliliters per gram, comprising:

- (a) contacting a zeolite Y with a binder in the presence of volatiles to form a mixture wherein the weight percent of zeolite Y is in the range of about 40 to about 99 percent based on the total dry weight of the resulting catalyst composite, and wherein the volatiles in the mixture are in the range of about 30 weight percent to about 70 weight percent of the mixture;
- (b) shaping the mixture to form a composite;
- (c) drying the composite; and

Preliminary Amendment and
Response to Restriction Request
Attorney Docket No. T-6217
Application No. 10/800,047
Page 6

(d) calcining the composite in a substantially dry environment.

Claim 21 (Original) The process of claim 20 wherein in step (b) shaping comprises extruding.

Claim 22 (Original) The process of claim 20 wherein in step (a) the weight percent of zeolite Y is in the range of about 50 to about 85.

Claim 23 (Original) The process of claim 20 wherein the binder in step (a) is a suitable inorganic material.

Claim 24 (Original) The process of claim 23 wherein the binder is alumina.

Claim 25 (Original) The process of claim 20 wherein in step (a) the volatiles in the mixture are present in the range of about 40 weight percent to about 60 weight percent of the mixture.

Claim 26 (Original) The process of claim 25 wherein the volatiles comprise water and an acid.

Claim 27 (Original) A catalyst composite prepared by the process of claim 20.

Claim 28 (Original) A process for preparing an alkylated aromatic composition comprising:

contacting at least one aromatic hydrocarbon with at least one olefin under alkylation conditions in the presence of a catalyst

Preliminary Amendment and
Response to Restriction Request
Attorney Docket No. T-6217
Application No. 10/800,047
Page 7

having a macropore structure comprising zeolite Y wherein the peak macropore diameter, measured by ASTM Test No. D 4284-03, is less than about 2000 angstroms and the cumulative pore volume of the catalyst at pore diameters less than or equal to about 500 angstroms, measured by ASTM Test No. D 4284-03, is less than or equal to about 0.30 milliliters per gram.

- Claim 29 (Original) The process of claim 28 further comprising sulfonating the alkylated aromatic composition to form an alkylated aromatic sulfonic acid.
- Claim 30 (Original) The process of claim 29 further comprising reacting the alkylated aromatic sulfonic acid with an alkaline earth metal and carbon dioxide to produce a carbonated, overbased alkylated aromatic sulfonate.
- Claim 31 (Original) A process for producing an alkylated aromatic composition comprising:
- contacting at least one aromatic hydrocarbon with at least one olefin under alkylation conditions in the presence of the catalyst composite of claim 20.
- Claim 32 (Original) The process of claim 31 wherein the aromatic hydrocarbon is benzene or toluene.

Preliminary Amendment and
Response to Restriction Request
Attorney Docket No. T-6217
Application No. 10/800,047
Page 8

- Claim 33 (Original) The process of claim 31 wherein the olefin is an alpha olefin, an isomerized olefin, a branched-chain olefin or mixtures thereof.
- Claim 34 (Original) The process of claim 33 wherein the olefin has from about 4 carbon atoms to about 80 carbon atoms.
- Claim 35 (Original) The process of claim 33 wherein the alpha olefin or the isomerized olefin have from about 6 carbon atoms to about 40 carbon atoms.
- Claim 36 (Original) The process of claim 35 wherein alpha olefin or the isomerized olefin have from about 20 carbon atoms to about 40 carbon atoms.
- Claim 37 (Original) The process of claim 33 wherein the branched-chain olefin has from about 6 carbon atoms to about 70 carbon atoms.
- Claim 38 (Original) The process of claim 37 wherein the branched-chain olefin has from about 8 carbon atoms to about 50 carbon atoms.
- Claim 39 (Original) The process of claim 38 wherein the branched-chain olefin has from about 12 carbon atoms to about 18 carbon atoms.
- Claim 40 (Original) The process of claim 33 wherein the olefin is a partially-branched-chain isomerized olefin wherein the olefin has from about 6 carbon atoms to about 40 carbon atoms.

Preliminary Amendment and
Response to Restriction Request
Attorney Docket No. T-6217
Application No. 10/800,047
Page 9

- Claim 41 (Original) The process of claim 40 wherein the partially-branched-chain isomerized olefin has from about 20 carbon atoms to about 40 carbon atoms.
- Claim 42 (Original) The process of claim 31 further comprising sulfonating the alkylated aromatic composition to form an alkylated aromatic sulfonic acid.
- Claim 43 (Original) The process of claim 42 further comprising reacting the alkylated aromatic sulfonic acid with an alkaline earth metal and carbon dioxide to produce a carbonated, overbased alkylated aromatic sulfonate.